OIPE

RAW SEQUENCE LISTING

DATE: 02/07/2002

PATENT APPLICATION: US/09/901,106

TIME: 11:05:42

Input Set : N:\Crf3\RULE60\09901106.raw Output Set: N:\CRF3\02072002\I901106.raw

SEQUENCE LISTING

```
(1) GENERAL INFORMATION:
      5
             (i) APPLICANT: Garoff, Henrik
                             Liljestrom, Peter
      6
            (ii) TITLE OF INVENTION: DNA Expression Systems Based on
      8
      9
                                      Alphaviruses
           (iii) NUMBER OF SEQUENCES: 27
     11
            (iv) CORRESPONDENCE ADDRESS:
     13
                  (A) ADDRESSEE: Birch, Stewart, Kolasch & Birch
     14
                  (B) STREET: P.O. Box 747
     15
                  (C) CITY: Falls Church
     16
                                                        ENTERED
     17
                  (D) STATE: Virginia
                  (E) COUNTRY: USA
     18
                  (F) ZIP: 22040-0747
     19
             (V) COMPUTER READABLE FORM:
     21
                  (A) MEDIUM TYPE: Floppy disk
     22
     23
                  (B) COMPUTER: IBM PC compatible
     24
                  (C) OPERATING SYSTEM: PC-DOS/MS-DOS
     25
                  (D) SOFTWARE: PatentIn Release #1.0, Version #1.25
     27
            (vi) CURRENT APPLICATION DATA:
                  (A) APPLICATION NUMBER: US/09/901,106
C--> 28
                  (B) FILING DATE: 10-Jul-2001
C--> 29
                  (C) CLASSIFICATION:
     30
         · (vii) PRIOR APPLICATION DATA:
     33
                  (A) APPLICATION NUMBER: US/07/920,281C
     34
     35
                  (B) FILING DATE: 13-AUG-1992
     38
          (viii) ATTORNEY/AGENT INFORMATION:
     39
                  (A) NAME: Murphy Jr., Gerald M.
                  (B) REGISTRATION NUMBER: 28,977
     40
     41
                  (C) REFERENCE/DOCKET NUMBER: 828-103P
            (ix) TELECOMMUNICATION INFORMATION:
     43
                  (A) TELEPHONE: 703-241-1300
     44
     45
                  (B) TELEFAX: 703-241-2848
                  (C) TELEX: 248345
     46
     49 (2) INFORMATION FOR SEQ ID NO: 1:
             (i) SEQUENCE CHARACTERISTICS:
     51
     52
                  (A) LENGTH: 11517 base pairs
     53
                  (B) TYPE: nucleic acid
     54
                  (C) STRANDEDNESS: single
     55
                  (D) TOPOLOGY: linear
     57
            (ii) MOLECULE TYPE: RNA (genomic)
```

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

59

61

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Input Set : N:\Crf3\RULE60\09901106.raw
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·														
63 (vi) ORIGINAL SOURCE:														
(A) ORGANISM: Semliki Forest Virus														
66 (ix) FEATURE:														
(A) NAME/KEY: -														
8 (B) LOCATION: 111517														
(D) OTHER INFORMATION: /label= genome														
70 /note= "Semliki Forest Virus complete nucleotide														
71 sequence, presented as a cloned DNA sequence; see														
72 Figure 5."														
74 (ix) FEATURE:														
75 (A) NAME/KEY: CDS														
76 (B) LOCATION: 877379														
77 (D) OTHER INFORMATION: /product= "SFV polyprotein"														
79 (ix) FEATURE:														
80 (A) NAME/KEY: CDS														
81 (B) LOCATION: 742111179														
82 (D) OTHER INFORMATION: /product= "SFV polyprotein"														
85 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 1:														
87 GATGGCGGAT GTGTGACATA CACGACGCCA AAAGATTTTG TTCCAGCTCC TGCCACCTCC	60													
89 GCTACGCGAG AGATTAACCA CCCACG ATG GCC GCC AAA GTG CAT GTT GAT ATT	113													
90 Met Ala Ala Lys Val His Val Asp Ile														
91 1 5														
93 GAG GCT GAC AGC CCA TTC ATC AAG TCT TTG CAG AAG GCA TTT CCG TCG	161													
94 Glu Ala Asp Ser Pro Phe Ile Lys Ser Leu Gln Lys Ala Phe Pro Ser	101													
	209													
97 TTC GAG GTG GAG TCA TTG CAG GTC ACA CCA AAT GAC CAT GCA AAT GCC	209													
98 Phe Glu Val Glu Ser Leu Gln Val Thr Pro Asn Asp His Ala Asn Ala														
99 30 35 40	257													
101 AGA GCA TTT TCG CAC CTG GCT ACC AAA TTG ATC GAG CAG GAG ACT GAC	231													
102 Arg Ala Phe Ser His Leu Ala Thr Lys Leu Ile Glu Gln Glu Thr Asp														
103 45 50 55 105 105 105 105 105 105 105 105	205													
105 AAA GAC ACA CTC ATC TTG GAT ATC GGC AGT GCG CCT TCC AGG AGA ATG	305													
106 Lys Asp Thr Leu Ile Leu Asp Ile Gly Ser Ala Pro Ser Arg Arg Met														
107 60 65 70	252													
109 ATG TCT ACG CAC AAA TAC CAC TGC GTA TGC CCT ATG CGC AGC GCA GAA	353													
110 Met Ser Thr His Lys Tyr His Cys Val Cys Pro Met Arg Ser Ala Glu														
111 75 80 85	401													
113 GAC CCC GAA AGG CTC GAT AGC TAC GCA AAG AAA CTG GCA GCG GCC TCC	401													
114 Asp Pro Glu Arg Leu Asp Ser Tyr Ala Lys Lys Leu Ala Ala Ala Ser														
115 90 95 100 105														
117 GGG AAG GTG CTG GAT AGA GAG ATC GCA GGA AAA ATC ACC GAC CTG CAG	449													
118 Gly Lys Val Leu Asp Arg Glu Ile Ala Gly Lys Ile Thr Asp Leu Gln														
119 110 115 120														
121 ACC GTC ATG GCT ACG CCA GAC GCT GAA TCT CCT ACC TTT TGC CTG CAT	497													
122 Thr Val Met Ala Thr Pro Asp Ala Glu Ser Pro Thr Phe Cys Leu His														
123 125 130 135														
125 ACA GAC GTC ACG TGT CGT ACG GCA GCC GAA GTG GCC GTA TAC CAG GAC	545													
126 Thr Asp Val Thr Cys Arg Thr Ala Ala Glu Val Ala Val Tyr Gln Asp														
127 140 145 150														

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PATENT APPLICATION: US/09/901,106 TIM

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129	GTG	TAT	GCT'	GTA	CAT	GCA	CCA	ACA	TCG	CTG	TAC	CAT	CAG	GCG	ATG	AAA	593
130	Val	Tyr	Ala	Val	His	Ala	Pro	Thr	Ser	Leu	Tyr	His	Gln	Ala	Met	Lys	
131		155					160					165					
												ACC			_		641
	_	Val	Arg	Thr	Ala	_	Trp	Ile	Gly	Phe		Thr	Thr	Pro	Phe		
	170					175					180					185	
												GCC					689
	Phe	Asp	Ala	Leu		GLY	Ala	Tyr	Pro		Tyr	Ala	Thr	Asn	_	Ala	
139			a. a	ama	190	a. a	000			195		O.T.O.	mam		200	maa	727
												CTG					737
	Asp	GIU	GIn		Leu	GIn	Ата	Arg		тте	GLY	Leu	Cys		Ala	ser	
143	mma	1 CM	C . C	205		ama.	000		210	maa	s mm	ama	000	215	330	C 3 3	705
												CTC					785
	Leu	Thr		СТЙ	Arg	Leu	GIY	_	rea	ser	тте	Leu		гаг	гуѕ	GIN	
147	mmæ	* * *	220	mca	CAC	202	CmC	225	mma	maa	Cmx	CCA	230	7 (7 7	mmc	ma C	833
												GGA Gly					033
151	ьеи	цуS 235	PIO	Cys	ASP	1111	240	met	Pile	ser	Val	245	261	1111	Leu	тут	
	л Ст		ACC	ACA	AAC	СПУ		AGG	ACC	TGG	CAC	TTA	CCC	TCC	СΤΆ	ጥጥር	881
												Leu					001
	250	Giu	Der	nry	БуЗ	255	Deu	пту	561	115	260	ЦСИ	110	DCI	VUL	265	
		СТС	ΔΔΔ	GGT	ΔΔΔ		ፐርር	արար	ACC	тст		TGC	САТ	ACC	Δ ΨC		929
												Cys					323
159	1115	ЦСи	2,0	011	270	0	DCI	1 110		275	*** 9	010	1106		280		
	TCA	TGT	GAA	GGG		GTA	GTT	AAG	AAA		ACT	ATG	TGC	CCC			977
												Met					
163		-1-		285	-1-			-1-	290				-1-	295	1		
	TAC	GGT	AAA	ACG	GTA	GGG	TAC	GCC	GTG	ACG	TAT	CAC	GCG	GAG	GGA	TTC	1025
166	Tyr	Gly	Lys	Thr	Val	Gly	Tyr	Ala	Val	Thr	Tyr	His	Ala	Glu	Gly	Phe	
167	-	•	300			-	•	305			-		310		•	•	
169	CTA	GTG	TGC	AAG	ACC	ACA	GAC	ACT	GTC	AAA	GGA	GAA	AGA	GTC	TCA	TTC	1073
170	Leu	Val	Cys	Lys	Thr	Thr	Asp	Thr	Val	Lys	Gly	Glu	Arg	Val	Ser	Phe	
171		315					320					325					
173	CCT	GTA	TGC	ACC	TAC	GTC	CCC	TCA	ACC	ATC	TGT	GAT	CAA	ATG	ACT	GGC	1121
174	Pro	Val	Cys	Thr	Tyr	Val	Pro	Ser	Thr	Ile	Cys	Asp	Gln	Met	Thr	Gly	
175	330					335					340					345	
177	ATA	CTA	GCG	ACC	GAC	GTC	ACA	CCG	GAG	GAC	GCA	CAG	AAG	TTG	TTA	GTG	1169
	Ile	Leu	Ala	Thr	_	Val	Thr	Pro	Glu	_	Ala	Gln	Lys	Leu	Leu	Val	
179					350					355					360		
												ACA					1217
	Gly	Leu	Asn		Arg	Ile	Val	Val	Asn	Gly	Arg	Thr	Gln	Arg	Asn	Thr	
183				365					370					375			
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	Asn	Thr		Lys	Asn	Tyr	Leu		Pro	Ile	Val	Ala		Ala	Phe	Ser	
187			380					385					390				
												GAT					1313
	Ĺys		Ala	Arg	Glu	Tyr		Ala	Asp	Leu	Asp	Asp	GLu	Lys	Pro	Leu	
191		395	965			m.c	400		me =	mc ~	mc~	405	maa		mm~		1261
193	GGT	GTC	CGA	GAG	AGG	TCA	CTT	ACT	TGC	TGC	TGC	TTG	TGG	GCA	TTT	AAA	1361

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Input Set : N:\Crf3\RULE60\09901106.raw
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	_	_		_														
		Val	Arg	Glu	Arg			Thr	Cys	Cys	Cys	Leu	Trp	Ala	Phe	Lys		
	410					415					420					425		
								TAC										1409
		Arg	Lys	Met		Thr	Met	\mathtt{Tyr}	Lys		Pro	Asp	Thr	Gln	Thr	Ile		
199					430					435					440			
								AAC										1457
		Lys	Val		Ser	Glu	Phe	Asn	Ser	Phe	Val	Ile	Pro	Ser	Leu	\mathtt{Trp}		
203				445					450					455				
								GTC										1505
		Thr		Leu	Ala	Ile	Pro	Val	Arg	Ser	Arg	Ile		Met	Leu	Leu		
207			460					465					470					
	_							TTA										1553
			Lys	Thr	Lys	Arg		Leu	Ile	Pro	Val		Asp	Ala	Ser	Ser		
211		475					480					485						
								GAG										1601
		Arg	Asp	Ala	GLu		Glu	Glu	Lys	Glu	-	Leu	Glu	Ala	Glu			
	490					495					500					505	-	
						•		CTC										1649
		Arg	Glu	Ala		Pro	Pro	Leu	Val		Ile	Ala	Pro	Ala		Thr		
219					510					515					520			
								GAA										1697
	GIY	Val	Val		val	Asp	Val	Glu		Leu	Glu	Tyr	His		Gly	Ala		
223				525					530					535				
								AGC										1745
	GIY	vaı		GIU	Thr	Pro	Arg	Ser	Ата	Leu	Lys	Val		Ala	GIn	Pro		
227	220	03.0	540	C	Cm s		3 3 M	545	G		ama		550	a				1700
								TAC										1793
231	ASII		Val	Leu	ьeu	GTĀ		Tyr	vaı	vaı	ьеи		Pro	GIN	Thr	vaı	ė	
	CITIC	555	3.00	шаа	3 3 C	mmc	560	000	CEC	030	aam.	565	223	a.a	a. a	ama		1041
								CCC										1841
	570	пуз	261	Ser	пуъ	575	нта	Pro	vai	птэ	580	теп	АТа	GIU	GIII			
		מידית	אידיא	አሮአ	ሮአጥ		CCC	AGG	CCC	ccc		m a C	CAC	CTC	CAC	585		1000
								Arg										1889
239	273	110	110	1111	590	Non	GLY	пту	AIU	595	оту	TYL	GIII	Val	600	GIY		
	тат	GAC	GGC	AGG		СТА	СТА	CCA	ጥርጥ		ጥርር	GCC	ייייי ע	CCG		CCT		1937
								Pro										1931
243	-1-		U .1	605		Deu	LCu	110	610	OL1	JCI	mu	110	615	vul	FIO		
	GAG	ጥጥጥ	CAA		ттG	AGC	GAG	AGC		аст	ATG	GTG	ТΑС		CAA	AGG		1985
								Ser										1703
247			620					625					630		<u></u>	*** 9		
	GAG	TTC		AAC	AGG	AAA	CTA	TAC	CAT	АТТ	GCC	GTT		GGA	CCG	TCG		2033
								Tyr										
251		635			,	-1-	640	-1-				645	0	0.1		501		
	CTG		ACC	GAC	GAG	GAG		TAC	GAG	AAA	GTC		GCT	GAA	AGA	ACT		2081
								Tyr										
255				•		655		-		4 -	660					665		
		GCC	GAG	TAC	GTG		GAC	GTA	GAT	AAA		TGC	TGC	GTC	AAG		:	2129
258	Asp	Ala	Glu	Tyr	Val	Phe	Asp	Val	Asp	Lys	Lys	Cys	Cys	Val	Lys	Arq		
	-			-			-		•	-	-	-	-		-	,		

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Input Set : N:\Crf3\RULE60\09901106.raw Output Set: N:\CRF3\02072002\I901106.raw

259					670					675					680			
		GAA	GCG	TCG			GTG	TTG	GTG		GAG	СТА	ACC	AAC		CCG	21	.77
																Pro		
263				685					690	_				695				
265	TTC	CAT	GAA	TTC	GCC	TAC	GAA	GGG	CTG	AAG	ATC	AGG	CCG	TCG	GCA	CCA	22	25
266	Phe	His	Glu	Phe	Ala	Tyr	Glu	Gly	Leu	Lys	Ile	Arg	Pro	Ser	Ala	Pro		
267			700					705					710					
													GGA				22	73
270	Tyr	Lys	Thr	Thr	Val	Val	Gly	Val	Phe	Gly	Val	Pro	Gly	Ser	Gly	Lys		
271		715					720					725						
													CTG				23	21
		Ala	Ile	Ile	Lys	Ser	Leu	Val	Thr	Lys	His	Asp	Leu	Val	Thr	Ser		
	730					735					740					745		
													GTG		_		23	69
	GTA	Lys	Lys	GLu		Cys	Gln		Ile		Asn	Asp	Val	Lys		His		
279	~~~	~~~			750			· .		755					760			
													ATC				24	17
	Arg	GIY	Lys		Thr	ser	Arg	Glu		Ser	Asp	Ser	Ile		Leu	Asn		
283	000	mam	CCM	765	000	ama	03.0	3 Mic	770	m 3 m	ama.	a. a	a.a	775	mm.a	a a =	0.4	٠.
													GAG				24	65
287	ату	Cys	780	AIG	нта	Val	ASP	785	ьeu	TAT	Val	ASP	Glu	Ald	Pne	Ата		
	TCC	САТ		ССТ	አ ርጥ	CTC	CTC		CTA	y upun	CCT	Cmm	790 GTT	***	CCT	CCC	25	1 2
													Val				25	13
291	C 7 5	795	DCI	OL y	1111	DCu	800	ALU	шец	116	Ата	805	Val	цуз	FIU	ALG		
	AGC		GTG	GTG	тта	TGC		GAC	CCC	AAG	CAA		GGA	ጥጥር	ጥጥር	ΔΔΤ	25	61
													Gly				23	V 1
	810					815	1	F		-10	820	010	0-1			825		
297	ATG	ATG	CAG	CTT	AAG	GTG	AAC	TTC	AAC	CAC		ATC	TGC	ACT	GAA		. 26	09
													Cys					
299					830		,			835			•		840			
301	TGT	CAT	AAA	AGT	ATA	TCC	AGA	CGT	TGC	ACG	CGT	CCA	GTC	ACG	GCC	ATC	26	57
302	Cys	His	Lys	Ser	Ile	Ser	Arg	Arg	Cys	Thr	Arg	Pro	Val	Thr	Ala	Ile		
303				845					850					855				
													ACC				27	05
	Val	Ser		Leu	His	Tyr	Gly	Gly	Lys	Met	Arg	Thr	Thr	Asn	Pro	Cys		
307			860					865					870					
													AAG				27	53
	Asn		Pro	Ile	Ile	Ile		Thr	Thr	Gly	Gln		Lys	Pro	Lys	Pro		
311		875				- ~-	880					885						
													AAG				280	01
		Asp	тте	vaı	Leu		Cys	Pne	Arg	GLY		Ala	Lys	GIn	Leu			
315		CAG	m n C	CCIII	CCA	895	C 3 3	CEC	a moo	7.03	900	003	003	mar	03.0	905	2.2	4.0
													GCA				284	49
319	neu	ush	тАт	лту	910	urz	GIU	val	MEL	915	ATG	HIG	Ala	ser		стА		
	ርጥር	ACC	ccc	Δ À Δ		СТА	ሞልሮ	GCC	GT A		CAC	አስር	GTG	חתת	920	אאת	200	0.7
													Val				289	<i>3</i>
323	u		9	925	-1	, u I	- 1 -	*****	930	y	GIII	دلان		935	GIU	สอแ	. •	
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VERIFICATION SUMMARY

PATENT APPLICATION: US/09/901,106

L:28 M:220 C: Keyword misspelled or invalid format, [(A) APPLICATION NUMBER:]

DATE: 02/07/2002 TIME: 11:05:43

Input Set : N:\Crf3\RULE60\09901106.raw
Output Set: N:\CRF3\02072002\I901106.raw

L:29 M:220 C: Keyword misspelled or invalid format, [(B) FILING DATE:] L:703 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:707 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:711 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:715 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:719 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:723 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:727 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:731 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:735 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:739 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:743 M:336 W: Invalid Amino Acid Number in Coding Region, SEO ID:1 L:747 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:751 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:755 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:759 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:763 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:767 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:771 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:775 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:779 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:783 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:787 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:791 M:336 W: Invalid Amino Acid Number in Coding Region, SEO ID:1 L:795 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:799 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:803 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:807 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:811 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:815 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:819 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:823 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:827 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:831 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:835 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:839 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:843 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:847 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:851 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:855 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:859 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:863 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:867 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:871 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:875 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:879 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:883 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1

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L:887 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:891 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:895 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 L:899 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1